



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

|                         |             |                      |                     |                  |
|-------------------------|-------------|----------------------|---------------------|------------------|
| APPLICATION NO.         | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
| 10/665,875              | 09/19/2003  | Akash R. Deshpande   | ARCU-047-102        | 6767             |
| 28120                   | 7590        | 08/31/2009           | EXAMINER            |                  |
| ROPES & GRAY LLP        |             |                      | KAWSAR, ABDULLAH AL |                  |
| PATENT DOCKETING 39/41  |             |                      | ART UNIT            | PAPER NUMBER     |
| ONE INTERNATIONAL PLACE |             |                      |                     |                  |
| BOSTON, MA 02110-2624   |             |                      | 2195                |                  |
| MAIL DATE               |             | DELIVERY MODE        |                     |                  |
| 08/31/2009              |             | PAPER                |                     |                  |

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

|                              |                                       |  |
|------------------------------|---------------------------------------|--|
| <b>Office Action Summary</b> | <b>Application No.</b><br>10/665,875  | <b>Applicant(s)</b><br>DESHPANDE, AKASH R. |
|                              | <b>Examiner</b><br>ABDULLAH AL KAWSAR | <b>Art Unit</b><br>2195                    |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If no period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

1) Responsive to communication(s) filed on 25 March 2004.  
 2a) This action is FINAL.      2b) This action is non-final.  
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

4) Claim(s) 54-86 is/are pending in the application.  
 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
 5) Claim(s) \_\_\_\_\_ is/are allowed.  
 6) Claim(s) 54-86 is/are rejected.  
 7) Claim(s) \_\_\_\_\_ is/are objected to.  
 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

9) The specification is objected to by the Examiner.  
 10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
 a) All    b) Some \* c) None of:  
 1. Certified copies of the priority documents have been received.  
 2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

1) Notice of References Cited (PTO-892)  
 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)  
 3) Information Disclosure Statement(s) (PTO/SB/08)  
 Paper No(s)/Mail Date 4/23/2004      4) Interview Summary (PTO-413)  
 Paper No(s)/Mail Date. \_\_\_\_\_.  
 5) Notice of Informal Patent Application  
 6) Other: \_\_\_\_\_

**DETAILED ACTION**

1. Claims 54-86 are pending.

***Claim Rejections - 35 USC § 101***

2. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

3. Claims 54-64 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

4. Claim 54 recites a method comprising steps that may be performed mentally and or manually by a human being. Thus the method neither explicitly recites another statutory class of invention (i.e. a machine, a manufacture or a composition of matter) nor inherently requires the use of a particular machine or apparatus. Accordingly, the recited invention is nonstatutory subject matter.

5. Claims 55-64 are dependent on claim 54 and does not cure the deficiency of claim 54 above. Therefore they are rejected under the same rational.

***Claim Rejections - 35 USC § 112***

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Claims 54-86 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

- a. The following terms lack antecedent basis:
  - i. Claim 54, line 3 -- “the value” --
  - ii. Claim 65, line 5 – “the value”--
  - iii. Claim 76, line 6 – “the value” --
- b. The following claim languages are not clearly understood and indefinite:
  - i. Claim 54, line 3 recites “obtaining the value of a first time” is not clear how the time value is obtained (i.e. in hours/minutes/seconds or clock time?).  
Line 4 recites “computing a first time interval until a second interrupt is scheduled” it is not clear based on what value the first time interval is calculated (i.e. based on the recorded 1<sup>st</sup> interrupt time value? Calculated in hours/minutes/seconds or clock time? ) also it is not clear what is the actual interval being calculated (i.e. interval between the recorded 1<sup>st</sup> interrupt time and the scheduled 2<sup>nd</sup> interrupt time? Or interval of the recorded 1st interrupt time until the 2nd interrupt is scheduled (which is not the 2<sup>nd</sup> interrupt scheduled time for execution) ?). Line 5 recites “obtaining a value of a second time when the first time interval is computed” it is unclear what constitutes the second time and how is that obtained (i.e. what is the value based on? Based on the interval of the 1st interrupt? Is it a timestamp or a time interval? ) when the 1<sup>st</sup> time interval is computer (i.e. time needed to compute the 1<sup>st</sup> time interval? Time needed to

complete servicing the 1<sup>st</sup> interrupt?). Line 6 recites “computing second time interval” it is unclear what constitute the second time interval and how is the calculation done between time interval and time stamp (i.e. interval time between the first interval and second time value? time difference between the scheduled 2<sup>nd</sup> interrupt and the actual completion of the 1<sup>st</sup> interrupt? ). Line 7 recites “scheduling the second interrupt to arrive.... second time” it is not clear what constitute the second time and what is the difference between the first time interval and second time interval what is the relation between the 1st and 2nd interrupt (i.e. second time interval is a time difference of the before the 2<sup>nd</sup> interrupt can execute after the completion of the 1<sup>st</sup> interrupt? this second time interval is the time difference of the actual completion time of the 1st interrupt? The time between the initial computed completion time and the actual completion time of the 1<sup>st</sup> interrupt? Changing the 2<sup>nd</sup> interrupt scheduled time to as soon as on the completion of the 1<sup>st</sup> interrupt?).

- ii. Claims 65 and 76 have similar deficiency as claim 54 above.
- iii. Claim 55, line 3 recites “updating a state variable” it is not clear what constitute a state variable and how is that updated (i.e. state of the interrupts in the scheduling system as ready, wait, running? state variable as current time?).
- iv. Claims 66 and 77 have similar deficiency as claim 55 above.
- v. Claim 56, line 3 recites "interacting with physical environment" it is unclear what constitute physical environment and who, how interacting with

physical environment (i.e. real time environment? Real system clock time?

Scheduling system interacts with real time system?).

vi. Claims 67 and 78 have similar deficiency as claim 56 above.

vii. Claim 62, line 2 recites “updating a state of said scheduling system” it is not clear what constitutes updating a state of the scheduling system and what is defined by a state (i.e. updating the scheduled time? updating the interrupt state as active, idle, running? updating the scheduled time based on the previous interrupt processing time to reflect the new scheduled time?).

viii. Claims 73 and 84 have similar deficiency as claim 62 above.

***Claim Rejections - 35 USC § 103***

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 54-86 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lever (US Patent No. 5944840), in view of Merrell et al.(US Patent No. 4263647).

10. As per claim 54, Lever teaches the invention substantially as claimed including a method for dynamic slip control in a scheduling system, the method comprising:

receiving a first interrupt (abstract, lines 3-5);

obtaining the value of a first time when the first interrupt is received (abstract, lines 3-5);

obtaining the value of a second time when the first time interval is computed (col 2, lines 65-67 through col 3, line 1);

computing a second time interval, based on said first time interval and said second time value (col 3, lines 1-3).

Lever does not specifically disclose computing a first time interval until a second interrupt is scheduled (col 3, lines 5-10; lines 18-21); and scheduling said second interrupt to arrive at or after an expiration of said second time interval.

However Merrell teaches computing a first time interval until a second interrupt is scheduled (figure 12; col 18, lines 52-64);

scheduling said second interrupt to arrive at or after an expiration of said second time interval (col 19, lines 16-41).

11. It would have been obvious to a person of ordinary skill in art at the time of invention was made to incorporate the teaching of Merrell into the method of Lever to compute the first interval until a second interrupt is scheduled and scheduling said second interrupt to arrive at or after an expiration of said second time interval. The modification would have been obvious because one of the ordinary skills of the art would utilize the teaching of Merrell to define the wait time or interval time between system processes and execute the second process after the 1st process is completed to utilize any unused CPU cycle.

12. As per claim 55, Lever teaches after the act of obtaining the value of a first time when the first interrupt is received and before the act of obtaining the value of a second time when the first

time interval is computed, updating a state variable of said scheduling system (col 6, lines 44-49).

13. As per claim 56, Lever teaches after the act of obtaining the value of a first time when the first interrupt is received and before the act of obtaining the value of a second time when the first time interval is computed, interacting with a physical environment (col 2, lines 65-67 through col 3, line 1).

14. As per claim 57, Lever teaches wherein said act of interacting with the physical environment comprises receiving a signal from the physical environment indicative of a state of the physical environment (col 6, lines 44-64).

15. As per claim 58, Lever teaches wherein said act of interacting with the physical environment comprises receiving an instruction from the physical environment to modify a state of the scheduling system (col 6, lines 44-49).

16. As per claim 59, Lever teaches estimating a latency of receipt of said first interrupt, and wherein said act of computing said second time interval is further based on said estimated latency (col 3, lines 1-5).

17. As per claim 60, Lever teaches wherein said first interrupt is received from a first platform and the act of estimating said latency comprises analyzing a performance characteristic of said platform (col 8, lines 32-39).
18. As per claim 61, Lever teaches wherein said first interrupt is received from a first platform and the act of estimating said latency comprises accessing statistical information regarding a performance characteristic of said platform (col 8, lines 17-39).
19. As per claim 62, Lever teaches estimating a processing time for updating a state of said scheduling system, and wherein said act of computing said second time interval is further based on said estimated time col 2, lines 65-67 through col 3, lines 1-11).
20. As per claim 63, Lever teaches wherein the act of estimating said processing time comprises analyzing a performance characteristic of said scheduling system (col 8, lines 32-39).
21. As per claim 64, Lever teaches wherein the act of estimating said processing time comprises accessing statistical information regarding a performance characteristic of said scheduling system (col 8, lines 17-39).
22. As per claims 65-75, they have similar limitations as of claims 54-64 above. Therefore they are rejected under the same rational as of claims 54-64 above.

23. As per claims 76-86, they have similar limitations as of claims 54-64 above. Therefore they are rejected under the same rational as of claims 54-64 above.

*Conclusion*

24. Any inquiry concerning this communication or earlier communications from the examiner should be directed to ABDULLAH AL KAWSAR whose telephone number is (571)270-3169. The examiner can normally be reached on 7:30am to 5:00pm, EST.

25. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Meng Ai T. An can be reached on 571-272-3756. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

26. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Meng-Ai An/  
Supervisory Patent Examiner, Art Unit 2195

/Abdullah-Al Kawsar/  
Examiner, Art Unit 2195